(19) Japan Patent Office (JP)
(12) **Laid-Open Patent Publication (A)**
(11) Laid-Open Patent Application
S58-69241

(51) Int. Cl.^{3}	Internal Classification	Internal Filing Codes
C 08 L 27/20		7342-4J

(43) Laid-open Date: April 25, 1983

Number of Inventions: 1
Examination Requested:
Not requested
(Total 2 pages)

---

(54) A tetrafluoroethylene-hexafluoropropylene copolymer resin composition

(21) Application No: S56-169115

(22) Date Filed: October 22, 1981

(72) Inventor:
Kazuo Shingyouchi
Hitachi Cable, Ltd., Densen Laboratory
5-1 Hidaka-cho, Hitachi-shi

(72) Inventor:
Yoshiyuki Ando
Hitachi Cable, Ltd., Densen Laboratory
5-1 Hidaka-cho, Hitachi-shi

(72) Inventor:
Shuichi Tawarasako
Hitachi Cable, Ltd., Densen Laboratory
5-1 Hidaka-cho, Hitachi-shi

(72) Inventor:
Hideo Yamada
Hitachi Cable, Ltd., Densen Laboratory
5-1 Hidaka-cho, Hitachi-shi

(71) Applicant:
Hitachi Cable Ltd.
2-1-2 Marunouchi, Chiyoda-ku, Tokyo

(74) Agent:
Fujio Sato, Patent Attorney

Specification

Title of the Invention

A tetrafluoroethylene-hexafluoropropylene copolymer resin composition

Scope of the Patent Claims

1. A tetrafluoroethylene-hexafluoropropylene copolymer resin composition with tetrafluoroethylene-hexafluoropropylene as its basic material, characterized in that 0.5 or more parts by weight of tetrafluoroethylene-pefluoroalkoxyethylene copolymer are added per 100 parts by weight of said basic material.

Detailed Description of the Invention

The present invention concerns a tetrafluoroethylene-hexafluoropropylene copolymer resin composition with improved environmental stress cracking properties.

Tetrafluoroethylene-hexafluoropropylene resin compositions have been and still are widely used as molding materials for industrial use or in consumption-related [applications], because of the fact that they have many superior characteristics – physical, chemical, mechanical, thermal and electrical – and are furthermore easy to process by extrusion, injection and other molding methods; but it has recently been found that when they are immersed in or come into contact with some types of environmental substances, for example, animal/vegetable or mineral oils or fats, plasticizers or organic solvents, while subjected to stress, cracks occur, and may grow to the point of destruction.

The present invention takes as its objective the provision of a new tetrafluoroethylene-hexafluoropropylene copolymer resin composition that has improved environmental stress cracking properties without the loss of the many original superior characteristics – physical, chemical, mechanical, thermal and electrical – of tetrafluoroethylene-hexafluoropropylene copolymer resin compositions.

The gist of the present invention is that, in a composition with tetrafluoroethylene-hexafluoropropylene copolymer resin as its basic material, 0.5 or more parts by weight of tetrafluoroethylene-perchloroalkoxyethylene[1] copolymer are added per 100 parts by weight of the basic material. The effect of improved environmental stress cracking properties due to the addition of tetrafluoroethylene-pechloroalkoxyethylene copolymer is marked, and we are currently investigating the reason for this. The amount added has been limited from the standpoint of its effect on the resistance to environmental stress of the composition, because this effect has been difficult to discern with less than 0.5 parts by weight.

Working examples of the present invention are described in Table 1, together with comparison examples.

Table 1

	Working Examples			Comparison Examples		
	1	2	3	1	2	3
Tetrafluoroethylene-hexafluoropropylene copolymer (parts by weight)	100	100	100	100	100	100
Tetrafluoroethylene-perfluoroalkoxyethylene copolymer (parts by weight)	20	2	0.5	0.4	0.2	
Environmental stress cracking	No cracks	No cracks	No cracks	Cracks	Cracks	Cracks

Material melted by heating to molding temperature was brought into contact with dioctyl phthalate coated on a metal plate, and after cooling, the presence of cracking was investigated based on the ASTMD 1693 bent strip method in the medium of ethyl alcohol.

As is clear from the above explanation, the present invention makes it possible to improve the environmental stress cracking properties of tetrafluoroethylene-hexafluoropropylene copolymer resins without losing their good characteristics, and the industrial value of this is very great.

---

[1] Translator's note: Probable typo in original for perfluoroalkoxyethylene? Occurs twice in this paragraph.

Agent: Fujio Sato, Patent Attorney